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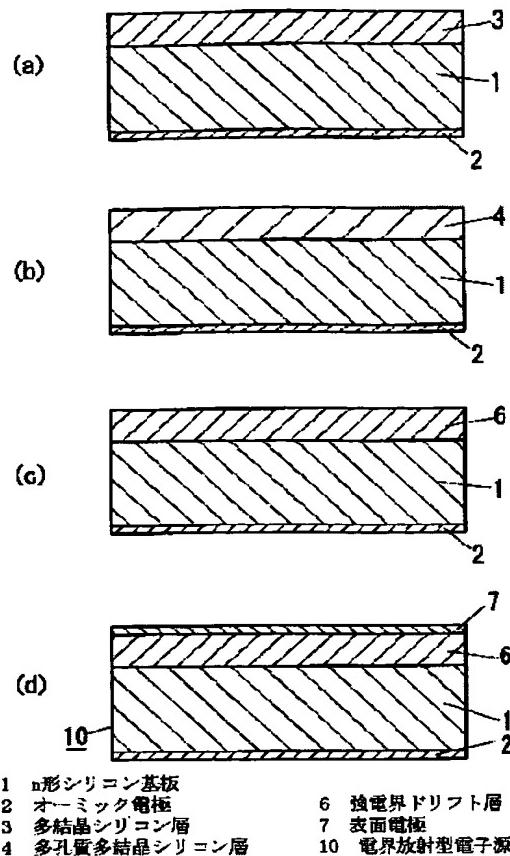
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APPLICANT : MATSUSHITA ELECTRIC WORKS LTD;

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TITLE : ELECTRIC FIELD RADIATION
 ELECTRON SOURCE AND METHOD
 FOR FABRICATING



ABSTRACT : PROBLEM TO BE SOLVED: To provide a method for fabricating an electric field radiation electron source with improved withstand voltage and electron emission efficiency.

SOLUTION: A strong electric field drift layer 6 made of an oxidized porous polycrystalline silicon layer is deposited on the main surface of a conductive n-type silicon substrate 1, having a surface electrode 7 formed thereon. An ohmic electrode 2 is formed in the inside of the n-type silicon substrate 1. The drift layer 6 is obtained by oxidizing the porous polycrystalline silicon layer 4 formed by oxidizing the polycrystalline silicon layer 3 with the anode. A lamp annealing apparatus is used for the oxidizing process, maintained under a vacuum during the period of temperature rise from room temperature to oxidation temperature, for example, 900°C, at which temperature the furnace is charged with oxygen to initiate oxidation process.

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